



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

MEMORANDUM FOR SEE DISTRIBUTION

FROM: HQ AFCESA/CEOT

SUBJECT: HVAC/R Utilization & Training Workshop (U&TW) Minutes

1. **PURPOSE:** To review and align AFMAN 36-2108 with the Career Field Education and Training Plan (CFETP), determine true 3-level student training requirements, Career Development Course (CDC) requirements, verify/identify core tasks, identify Mission Ready Airman (MRA) requirements and review advanced courses to meet the future training needs for the career field.

2. **LOCATION:** 366th Technical Training Squadron, Sheppard AFB, TX

3. **DATES:** 6-10 December 1999

4. **ATTENDEES:** SMSgt Mike Shakal, HQ AFCESA/CEOT, chaired the workshop. See Attachment 2 for list of attendees.

5. **SUMMARY:** Modified CFETP to meet existing requirements and aligned 3/5/7 level training requirements to match. Verify/identify cores tasks and identify future training needs for the HVAC/R career field through supplemental training.

6. **DISCUSSION:**

a. Opening remarks: Colonel Kwallek (782 TRG/CC) opened the workshop by welcoming all attendees and pointing out the significance each member will play in this workshop. Mr. Tom Kee (366 TRS, HVAC/R Training Manager) echoed the welcoming and briefed the attendees on administrative matters.

b. U&TW Charter/Agenda/Introductions: Chief Gelsleichter briefly described the three tier CE program review process to the workshop attendees. He stated that the U&TW and Education Working Groups (EWG) comprise the first tier and are the foundation on which all CE training and utilization is built. The second tier is the Training Review Committee which evaluates the work of the U&TW and EWG and its ability to meet the needs of the career field. The third, and top, tier in the review process is the Program Review Committee (PRC). The PRC acts on the recommendations of the TRC. He then pointed out how significant and vital each member's role is in producing a quality product to satisfy present and future requirements of the AFS. He further stated the decisions made during this week will have a profound affect on the AFS as the U&TW is the final decision body for establishing the requirements in the Specialty Training Standards (STS) portion of the CFETP. He then introduced the chairman for

the HVAC/R U&TW, SMSgt Mike Shakal (HQ AFCEA/CEOT). SMSgt Shakal gave his opening remarks, briefed the rules of engagement and lead the group through a get acquainted exercise.

c. Evaluation Report on HVAC/R Courses: Mr. Mike Mauldwin briefed the survey process. He stated that information is gathered using several tools such as Graduate Assessment Surveys (GAS), Training Assessment Surveys, Field Evaluation Questionnaires and Field interviews. These surveys are sent to supervisors/trainers of graduates to see if the training the students are receiving meet the needs of the field. Information gathered over the last 12 to 18 months indicates the field is satisfied overall with the material being taught.

d. Interservice Training Review Organization (ITRO): Ms. Edna Cooper (HQ AETC/ DOJ) gave a brief overview of ITRO, to include its history, requirements and how the Air Force fits in. In accordance with joint directive the host service will make changes to consolidated curricula (course revisions) after participating Services agree. Changes may not occur without approval of participating Services. HVAC/R is an ITRO course hosted by the Air Force. SMSgt Shakal stated that ITRO issues are dealt with at a different forum and that this briefing (as it relates to U&TW membership) is for informational purposes only and should not be considered when identifying HVAC/R requirements.

e. Community College of the Air Force (CCAF) Briefing: TSgt James Dinsmoore, (AETC), gave a briefing explaining mission of the CCAF. He explained that the CCAF is the largest community college in the world. He stated the degree requirements for the Mechanical Electrical Degree Program. He showed how the apprentice and advance course breakdown and apply to the degree.

f. Expeditionary Aerospace Force (EAF) Briefing: CMSgt Richard Park, (AF/ILEM), gave a brief explaining the EAF concept, its organization, advantages and challenges. He explained that for the most part we have been operating as an expeditionary force for the last 10 years. He discussed the EAF- 15 month – vulnerability cycle. An advantage would be personal and unit predictability relating to deployments. Some of the challenges include unit rotations and how Guard and Reserves role are played.

g. Civil Engineer (CE) Craftsman (7-Level Course) Briefing: Chief Joe B. Wallace, (366 TRS/ CCM), gave a briefing on how the CE Craftsman course came to be as a result of the Year of Training initiative. He gave a brief overview of the course contents: Block I Force Management and Block II Resources & Training. He emphasized the importance of all attendees meeting the prerequisites before attending this ten day course directed toward CE management. The individual must: a. Minimum 12 months on-the-job training (six months for retrainees with no previous CE operational Air Force specialty (AFS), b. Completion of career development courses (if applicable), c. Certification on all specialty training standards (Career Field Education & Training Plan, part II) core tasks, d. Completion of all AF qualification training packages (core and diamond tasks, if applicable), and e. completion of the exportable 7-Level Read-Ahead-Material (RAM) course on CD ROM. He emphasized that if attendees don't met all prerequisites they will be set back on day one.

h. “Just-in-Time” Briefing: MSgt Dan Red Cloud, (HQ AFCESA/CEX) gave a briefing on what is Just-in-Time training. He covered Specialty Training Locations (STLs), Regional Equipment Operators Training Sites (REOTS), and Regional Training Sites. He also briefed the location and POCs for each training site, and a brief synopsis of training available at each. MSgt Red Cloud went on to state that the HQ AFCESA web page can be used to find out more information about these sites.

i. Career Field Education and Training Plan (CFETP Part 1): SMSgt Shakal briefed the workshop membership on CFETP Part 1 changes. In an effort to standardize CFETPs numerous changes were made in areas common to all 13 CE AFSCs in this draft. This draft also includes interim changes dated 1 Feb 99. The group then reviewed the AFMAN 36-2108 and recommended changes. The group also reviewed Part I of the CFETP. See Attachment 3 and 4 for the recommended changes.

j. Occupational Measurement Squadron (OMS) Briefing: Mr Bob Yadrick, (AFOMS/OMYO) gave the Air Force OMS briefing. The mission of the Air Force Occupational Measurement Squadron (AFOMS) was defined as to improve Air Force capability by providing quality occupational analysis, promotion testing, and study guides to support Air Force Personnel Management programs. AFOMS evaluates each career field every 3-5 years or as needed. Mr. Yadrick pointed out that the analysis provided by the AFOMS serves as a foundation for U&TWs and emphasized the importance of correctly filing out the surveys that are used to compile the data. He also presented AFOMS test development concepts for the SKT and gave an overview of how to interpret the Occupational Survey Report (OSR) provided by AFOMS.

k. How Goes It Briefing & Tour of Training Facilities: Major Robert Yates and MSgt Albert Martinez, (366 TRS), gave a briefing on the various points of interest about HVAC/R apprentice and advance courses. The briefing was followed by a tour of the training facilities. Participants were then led on a tour of schoolhouse to include observing a couple classes in session.

l. Proficiency Code Brief: Mrs. Mary Koger, (366 TRS), gave a in-depth briefing on the proficiency codes. She defined what each code meant and emphasized and the importance of using them properly when developing the STS.

m. Mission Ready Airman Briefing: CMSgt Richard Park (AF/ILEM), gave a briefing on MRA, what it is, and how it relates to Civil Engineering. He stated that the MRA program is not designed to produce a 5 level journeyman. He also briefed the tasks identified for MRA should be ones that a trainee is expected to be able to perform by himself or herself within the first year of assignment. He also stated that HVAC/R is one of four CE AFSs that are currently MRA courses.

n. Specialty Training Standard (STS) Strawman: Mr. Tom Kee (366 TRS), briefed the participants on the schoolhouse recommended changes for the strawman STS. He stated to the group the recommendations were based on the Occupational Survey Report (OSR), local course subject matter experts, graduate assessment surveys, field recommendations, and common sense. Constraints were briefly addressed. The participants were briefed on the implications of

their recommendations and usage of the schoolhouse recommendations as a stepping stone to making group decisions. The participants reviewed the STS and recommendations were made. See Attachment 5 for a list of these recommendations.

o. Core Task Review: Chief Gelsleichter gave the briefing on core tasks. He gave a comprehensive definition of what constitutes a core task. He defined a core task as “those tasks considered most critical to the overall development of an Air Force Specialty.” He also urged the participants to look to the “essence of the career field” in helping to select core tasks. Discussion was begun at Section 9 and continued until all requirements had been reviewed and recommendations were made. The final draft was reviewed for accuracy. SMSgt Shakal noted that after the Core Task Review, the new version of the CFETP would have 15 ea 5-level core tasks, 2 ea 7 level core tasks, and 16 ea diamond tasks. See attachment 8 for the list of items identified as Core tasks

p. CDC Status Brief: MSgt Les Adams (366TRS) gave a brief history on the development for the new electronically enhanced (by including a CD ROM) CDCs . MSgt Dan Red Cloud (HQ AFCESA) briefed on the status of electronic contingency CDCs.

q. HVAC/R Supplemental Courses: Mr Tom Kee briefed that new courses we going to start in the near future. Courses 013, 014, and 015 were to replace 006, 007, and 008. The revised prerequisites for the classes will become effective when the new courses are come on line. A recommendation was made to consider using outside commercial sources for Direct Digital Controls courses instead of developing a course at the schoolhouse.

r. Review of ETCA: Mr. Tom Kee, briefed that Education & Training Course Announcement (ETCA) web site has replaced the AFCAT 36-2223. He showed excerpts from the webpage on pages containing information pertaining to HVAC/R courses. The course content of each supplemental course was reviewed and recommended changes were made, see Attachment 6.

7. **Closing Remarks:** SMSgt Shakal thanked the attendees for their participation and professionalism, which has made this U&TW a success. The workshop adjourned at 1200hrs on 10 Dec 99.

MICHAEL T. GELSLEICHTER, CMSgt, USAF
Air Force Civil Engineer Career Field Manager

Attachments:

1. Distribution List
2. Attendees
3. Changes to AFMAN 36-2108/ CFETP Part I & II Changes
4. Core Tasks
5. ETCA (AFCAT) Changes
6. Action Items
7. '99 3E1X1 U&TW Results
8. Voting Members

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HQ PACAF/CEOG
HQ USAFA/CCET
HQ USAFE/CEOM
11 CES/CCQT
HQ USAF/ILEM
366 TRS/CC

HVAC/R U&TW ATTENDEES

MEMBERS

<u>NAME</u>	<u>OFFICE</u>
SMSgt Mike Shakal - Chairman	HQ AFCESA/CEOT
SrA Derek Sonnier	11 th CES/CEOUS
TSgt Kieth B. Smith	5 th CES/CEOL2
TSgt David D. Dietz	37 CES/CEOF2
TSgt Paul M. Beach	66 CES/CEOFA
SMSgt Luther Mitchell	919 CES/CEO
SMSgt Darryl Foster	AFSPC/CE/CEF
MSgt Scott E. Cornell	16 CES/CEOFC
MSgt Ralph E. Johnson	668 LS/AIA/ILIIM
MSgt Phil Casey	375 th CES/CEOF
TSgt Brian Woodford	152 CES/ANG
SMSgt John Hunker	51 CES/CEOX
SMSgt Duane Roberson	HQ USAFE/CEOI

OTHER ATTENDEES

CMSgt Richard Park	AF/ ILEM
CMSgt Mike Gelsleichter	HQ AFCESA/CEOT
CMSgt Joe B. Wallace	366th TRS/CCM
CMSgt Trevor Henry	HQ ACC/
CMSgt Sue Wynn	HQ AFRC/
Mr Tom Kee	366th TRS/TRR
MSgt Dan Red Cloud	HQ AFCESA/CEX
Mr Yadrick	AFOMS/OMYO
Mr Quinn Hart	HQ AFCESA/CES
MSgt Troy Taylor	HQ ANG/
MSgt Les Adams	366TRS/
MSgt Nimrod Spence	366TRS/
MSgt Albert Martinez	366TRS/
MSgt Jesse Reynolds	HQ AMC/CEOG
SMSgt Jeff Williams	HQ ACC/CEOI
MS Edna Cooper	HQ AETC/DOO
TSgt William Souder	931 CES/CEOH
MSgt Larry Hardeman	786 CES/CEOIMV-R
TSgt James Dinsmoore	CCAF

RECOMMENDED CHANGES TO AFMAN 36-2108

Section 2.1.: Line 4. Insert “with”compliance “with” technical orders

CHANGES TO CFETP Part I

-Numerous small changes to CFETP Part I verbage were made for clarification purposes. Changes were also made to standardize the CFETP Part I between the 13 CE AFSs.

-Draft includes the all 1 Feb 99 Interim Changes.

-4.2.1.

- Change 3rd bullet to “Installs, connects, troubleshoots, and maintains HVAC/R controls.”
- Change 6th bullet to “Monitors systems operation to ensure efficiency and compliance with technical orders, manufacturer handbooks, local procedures, codes, and directives.”
- Change 7th bullet to “Evaluates water treatment for heating and cooling systems.”

-4.2.3. Change “on” to “with”

-Add new item:

“4.2.5. Performs inspection activities”

- Attends site visits
- Performs pre-acceptance inspections of HVAC/R systems

-8. Changed “MRT” to “MRA”

-10.1.1.5. Delete bullet “Freedom from fear of heights”

-10.3.1.2. Change 3rd bullet to “ANG/AFRC must complete ECI courses 00001 (ALS) and 00006 D&E (NCO Academy) to satisfy the requirements.”

-10.4.1.2. Change 2nd bullet to “ANG/AFRC must complete ECI course 00008 D&E (paper based correspondence) **or** course 00005 (computer based CD ROM) to satisfy the Senior NCO Academy requirement.”

Changes to CFETP Part II (STS)

ITEM NUMBER	CHANGE
1.4.4	Change to “HQ AFRC/ANG”
3.	Delete “B” from 5 skill level column
4.9.	Delete “A” from 3 skill level column
6.1.	Delete “B” from 5 skill level column
6.2.	Delete “B” from 5 skill level column
6.3.	Delete “B” from 5 skill level column
6.4.	Delete “B” from 5 skill level column
7.13.1.	Change “A” to “b” in 5 skill level column
7.13.2.	Change “A” to “b” in 5 skill level column
7.13.3.	Change “A” to “b” in 5 skill level column
7.13.4.	Change “A” to “b” in 5 skill level column
7.13.5.	Change “A” to “b” in 5 skill level column
8.1.	Delete “b” from 3 skill level column; Add a “B” to 5 skill level column
8.2.	Delete “b” from 3 skill level column; Add a “B” to 5 skill level column
8.3.	Delete “b” from 3 skill level column; Add a “B” to 5 skill level column
9.4.5.	Change “a” to “2b” in 3 skill level column
9.6.	Delete “C” from 5 skill level column
9.11.	Change “B” to “A” in 3 skill level column
9.12.	Change “B” to “A” in 3 skill level column
10.1.1.	Change “B” to “b” in 5 skill level column
10.1.2.	Change “B” to “b” in 5 skill level column
10.1.3.	Delete “A” from 3 skill level column: Change “B” to “b” in 5 skill level column
10.2.1.	Change “B” to “b” in 5 skill level column
10.2.3.	Delete “A” from 3 skill level column
10.2.4.	Delete “A” from 3 skill level column
10.2.5.	Delete “A” from 3 skill level column
10.3.	Delete CORE requirement
11.1.	Delete CORE requirement: Change “3c” to “2b” in 3 skill level column
11.3.	Delete CORE requirement: Change “3c” to “2b” in 3 skill level column
12.4.1.	Change “2b” to “3c” in 3 skill level column
12.4.2.	Change “2b” to “3c” in 3 skill level column
13.2.1.	Delete “Weld and” from task statement
15.	Change title from “HVAC SYSTEMS” to “AIR and HYDRONIC SYSTEMS”
15.1.1.	Change “B” to “A” in 3 skill level column
15.1.2.1.	Delete
15.1.2.2.	Delete
15.1.2.3.	Delete

- 15.1.3. “Fan and system curve relationship” changed to “Duct airflow characteristics”; Add “A” in 3 skill level column; Add “B” to 5 skill level column
- 15.1.4. Change “Air systems analysis” to “Single path”; Change “B” to “A” in 3 skill level column
- 15.1.5. Add line item “Multi-zone”; Add “A” to 3 skill level column; Add “B” to 5 skill level column
- 15.1.6. Add line item “Dual path”; Change “B” to “A” in the 3 skill level column
- 15.1.7. Add line item “Fan and system curve relationship”; leave “B” in 5 skill level column
- 15.1.8. Add line item “Perform psychrometric analysis”; “A” in 3 skill level column; leave “b” in 5 skill level column
- 15.1.9. Add line item “Constant Air Volume (CAV)”; “A” in 3 skill level column; leave “B” in 5 skill level column
- 15.1.10. Add line item “Variable Air Volume (VAV)”; “A” in 3 skill level column; leave “B” in 5 skill level column
- 15.1.11. Add line item heading “Dampers”
- 15.1.11.1 Add line item “Adjust dampers”; Change “2b” to “b” in 3 skill level column; leave “b” in 5 skill level column
- 15.1.11.2 Add line item “Adjust mechanical linkages” “2b” in the 3 skill level column; leave “b” in the 5 skill level column
- 15.1.12. Add line item “General procedures for air balancing”; Change “1a” to “a” in 3 skill level column; leave “b” in 5 skill level column
- 15.1.13. Add line item “Air volume measurement (methods, interpretation)”; Change “1a” to “a” in 3 skill level column; leave “b” in 5 skill level column
- 15.1.14. Add line item “Indoor air quality”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.1.15. Add line item “Interpret system drawings”; “2b” in the 3 skill level column; “c” in the 5 skill level column
- 15.2.1. Change task name from “Operating principles of pumps (types and construction features)” to “Operating principles of hydronic distribution systems (Types)”; “A” in the 3 skill level column; “B” in 5 skill level column
- 15.2.2. Change task name from “ Operating principles of hydronic distribution system (Types and Components)” to “Operating principles of pumps (types and construction features)”
- 15.2.2.1. Add line item “Install circulating pumps”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 15.2.2.2. Add line item “Adjust centrifugal water pump flow”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 15.2.2.3. Add line item “Adjust packing on water pumps”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 15.2.2.4. Add line item “Replace mechanical seals”; Add “2b” in the 3 skill level column; Add “b” in the 5 skill level column
- 15.2.2.5. Add line item “Pump and system curve relationships”; Add “A” in the 3 skill level column; Add “B” in the 5 skill level column

- 15.2.3.1. Change task from “Adjust hydronic system flow ” to “Hydronic systems analysis”; Add “A” in the 3 skill level column; Add “B” to 5 skill level column
- 15.2.3.2. Add line item “Hydronic volume measurement (methods, interpretation)”; Change “1a” to “a” in 3 skill level column; leave “b” in the 5 level skill column
- 15.2.3.3. Add line item “Perform general procedures for hydronic balancing”; Change “1a” to “a” in the 3 skill level column; leave “b” in the 5 skill level column
- 15.2.3.4. Add line item “Adjust hydronic system flow”; Change “1a” to “a” in 3 skill level column; leave “b” in 5 skill level column
- 15.2.4. Change task name from “Pump and system curve” to “Interpret system drawings”; leave “2b” in the 3 skill level; leave “c” in the 5 skill level column
- 15.2.5 Delete line item
- 15.3. Change heading from “Steam systems” to “Associated Components and Equipment”
- 15.3.1. Change “Properties of steam” to “Coils (Types and Applications)”
- 15.3.1.1. Add line item “Cooling”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.3.1.2. Add line item “Heating”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.3.1.3. Add line item “Preheat”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.3.1.4. Add line item “Reheat”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.3.2. Change “Operating principles of steam distribution systems (types and components)” to “Fancoil units”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.3.3. Change “ Steam system analysis” to “Adjust dehumidification equipment”; “a” in the 3 skill level column; “b” in the 5 skill level column
- 15.3.4. Add line item “Adjust humidification equipment”; “a” in the 3 skill level column; “b” in the 5 skill level column
- 15.3.5. Add line item “Filters (Types)”; “A” in the 3 skill level column; “B” in the 5 skill level column
- 15.4. Change “ HVAC Systems equipment” to “Perform Recurring Maintenance”
- 15.4.1. Change “Operating principles of systems units” to “Determine drive belt types and sizes”; “a” in the 3 skill level column; “b” in the 5 skill level column
- 15.4.1.1. Delete line item
- 15.4.1.2. Delete line item
- 15.4.1.3. Delete line item
- 15.4.1.4. Delete line item
- 15.4.2. Change “Operating principles of system components” to “Inspect and replace drive belts”; Add “a” in the 3 skill level column; Add “b” in the 5 skill level column
- 15.4.2.1. Delete line item
- 15.4.2.1.1. Delete line item
- 15.4.2.1.2. Delete line item
- 15.4.2.2. Delete line item

- 15.4.2.3. Delete line item
- 15.4.2.3.1. Delete line item
- 15.4.2.4. Delete line item
- 15.4.2.4.1. Delete line item
- 15.4.2.5. Delete line item
- 15.4.2.6. Delete line item
- 15.4.3. Add line item "Adjust drive belt tension"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.4. Add line item "Adjust pulleys"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.5. Add line item "Clean strainers"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.6. Add line item "Clean air filters"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.7. Add line item "Inspect water valves for leaks"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.8. Add line item "Inspect fan coil units"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.9. Add line item "Clean air handlers"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.4.10. Add line item "Clean coils"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 15.5. Delete line item
- 15.6. Delete line item
- 15.7. Delete line item
- 15.8. Delete line item
- 15.9. Delete line item
- 15.9.1. Delete line item
- 15.9.2. Delete line item
- 15.9.3. Delete line item
- 15.9.4. Delete line item
- 15.9.5. Delete line item
- 15.9.6. Delete line item
- 15.9.7. Delete line item
- 15.9.8. Delete line item
- 15.9.9. Delete line item
- 15.9.10. Delete line item
- 15.9.11. Delete line item
- 15.9.12. Delete line item
- 15.9.13. Delete line item
- 15.10. Delete line item
- 15.10.1. Delete line item
- 15.10.2. Delete line item
- 15.11. Delete line item
- 15.11.1. Delete line item
- 15.11.2. Delete line item

- 15.11.3. Delete line item
- 15.11.4. Delete line item
- 15.11.5. Delete line item
- 15.11.6. Delete line item
- 15.11.7 Delete line item
- 15.12. Delete line item (task moved to 15.2.4)
- 16.5. Delete CORE requirement
- 16.9.2 Delete “Remove or” from task
- 16.9.5. CORE requirement
- 16.9.6. CORE requirement
- 16.9.7. CORE requirement
- 16.11.1. Delete CORE requirement
- 16.11.2. Delete CORE requirement
- 17.1.4. Change “A” to “B” in 3 skill level column; Change “A” to “B” in the 5 skill level column
- 17.5.1. Delete CORE requirement
- 17.5.2. Delete CORE requirement
- 19.10.1. Delete CORE requirement
- 19.10.2. Delete CORE requirement
- 20.1. Change “Types of operating principles (fired tubes, watertubes, and cast iron)” to “Properties of steam”; Add “A” to 3 skill level column; Add “B” to 5 skill level column
- 20.2. Change “Construction features (waterside, fireside, and external fittings)” to “Operating principles of steam distribution systems (types and components); Add “B” to 3 skill level column; Add “B” to 5 skill level column
- 20.3. Change “Auxiliary equipment (feedwater system, safety devices, and controls)” to “Steam system analysis”; Add “B” to 5 skill level column
- 20.4. Change “Perform pre-operational inspection” to “Types of operating principles (fired tubes, watertubes, and cast iron)” Add “B” to the 5 skill level column
- 20.5. Change “Perform operational test” to “Construction features (waterside, fireside, and external fittings); “A” in the 3 skill level column; “B” in the 5 skill level column
- 20.6. Change “Perform recurring maintenance” to “Auxiliary equipment (feedwater system, safety devices and controls); “A” in the 3 skill level column; “B” in the 5 skill level column
- 20.7. Change “Repair boilers and/or auxiliary equipment” to “Perform pre-operational inspection”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 20.7.1. Delete line item
- 20.7.2. Delete line item
- 20.8. Change “Prepare boiler for inspection (Types A, B, C, D)” to “Perform operational test”; “1a” in 3 skill level column; “b” in 5 skill level column
- 20.9. Add line item “Perform recurring maintenance”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 20.10. Add line item “Repair and/or auxiliary equipment”

- 20.10.1 Add line item "Troubleshoot"; "2c" in the 3 skill level column; "b" in the 5 skill level column
- 20.10.2 Add line item "Correct Malfunctions"; "2c" in the 3 skill level column; "b" in the 5 skill level column
- 20.11. Add line item "Prepare boiler for inspection (Types A, B, C, D)"; "a" in 3 skill level column; "B" in 5 skill level column
- 21.3.2. Delete CORE requirements ; change "3c" to "C" in 3 skill level column
- 21.5.2.2. Change "Domestic refrigeration/water coolers" to "Ice machines"; "B" in the 3 skill level column; "B" in the 5 skill level column
- 21.5.2.3. Change "Ice machines" to "Cold Storage"; "B" in the 3 skill level column; "B" in the 5 skill level column
- 21.5.2.5. Delete line item and task number
- 21.5.3.7. Change "Lithium bromide absorption (theory and operation)" to "Plot pressure enthalpy chart for refrigeration cycle"; Make CORE requirement; Change "1a" to "2b" in 3 skill level column; leave "b" in 5 skill level column
- 21.5.3.8. Change "Plot pressure enthalpy chart for refrigeration cycle" to "Measure air conditioning and refrigeration system efficiency using pressure-temperatures charts"; Make CORE requirement; "2b" in the 3 skill level column; "b" in the 5 skill level column
- 21.5.3.9. Change "Measure air conditioning and refrigeration system efficiency using pressure temperature charts" to "Calculate and adjust superheat"; Add "A" in the 3 skill level column; "b" in the 5 skill level column; Make a 7 level CORE requirement
- 21.5.3.10. Change "Perform pre-operational inspection" to "Calculate subcooling"; Add "A" in the 3 skill level column; Add "b" in the 5 skill level column; Make a 7 level CORE requirement
- 21.5.3.11. Change "Perform recurring maintenance" to "Perform pre-operational inspection" ;
"2b" in the 3 skill level column; "b" in the 5 skill level column
- 21.5.3.12. Change "Repair" to "Perform recurring maintenance"; "a" in the 3 skill level column; "b" in the 5 skill level column
- 21.5.3.12.1. Delete line item
- 21.5.3.12.2. Delete line item
- 21.5.3.13. Add line item "Repair"
- 21.5.3.13.1 Add line item "Troubleshoot"; "2c" in the 3 skill level column; "b" in the 5 skill level column; Delete CORE requirement
- 21.5.3.13.2 Add line item "Correct malfunctions" "2c" in the 3 skill level column; "b" in the 5 skill level column; Delete CORE requirement
- 21.5.3.12. Delete line item (second 21.5.3.12.)
- 22.6.1. Delete CORE requirement
- 22.6.2. Delete CORE requirement
- 22.7. Delete line item
- 23.4. Add "a" to the 3 skill level column
- 23.5.1. Delete CORE requirement
- 23.5.2. Delete CORE requirement
- 24.4. Change "1a" to "a" in the 3 skill level column

- 25.1. Delete “sources and” from task
- 25.3.1.1. Remove “a” from the 3 skill level column
- 25.3.1.2. Remove “a” from the 3 skill level column
- 27.1.1.2. Change “B” to “a” in the 3 skill level column
- 27.2.1.2.2. Change “3c” to “2b” in the 3 skill level column; Delete CORE requirement
- 27.2.1.2.3. Change “3c” to “2b” in the 3 skill level column
- 27.2.1.2.4. Change “3c” to “2b” in the 3 skill level column
- 27.2.1.3.2. Change “3c” to “2b” in the 3 skill level column; Delete CORE requirement
- 27.2.2.1.1. Change “Operational principles” to “Setup”; Add “B” to the 3 skill level column; Add “B” to the 5 skill level column
- 27.2.2.1.2. Change “Perform Operational tests” to “Operational principles”; “B” in the 3 skill level column; “C” in the 5 skill level column
- 27.2.2.1.3. Change “Service/periodic maintenance” to “Perform Operational tests”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.1.4. Change “Troubleshooting” to “Service/periodic maintenance”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.1.5. Change “Repairs” to “Troubleshooting”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.1.6. Add line item “Repairs”; “1a” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.2.1. Change “Conduct Pre-operational test” to “Setup”; Add “2b” in the 3 skill level column; Add “b” in the 5 skill level column
- 27.2.2.2.2. Change “Service/periodic test” to “Conduct Pre-operational test”
- 27.2.2.2.3. Change “Troubleshoot” to “Service/periodic test”; Make Diamond requirement
- 27.2.2.2.4. Change “Repairs” to “Troubleshoot”
- 27.2.2.2.4.1. Add new line item “Using electrical schematic”; Add “3c” in the 3 skill level column Make Diamond requirement
- 27.2.2.2.4.2. Add new line item “Mechanical malfunctions”; Add “3c” in the 3 skill level column; “b” in the 5 skill level column; Make Diamond requirement
- 27.2.2.2.5. Add new line item “Repairs”; “2b” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.3.1. Delete Diamond requirement; change “3c” to “2b” in the 3 skill level column
- 27.2.2.3.4. Delete codes from 3 and 5 skill level columns
- 27.2.2.3.4.1. Add new line item “Using electrical schematic”; Add “3c” in the 3 skill level column; Add “b” in the 5 Skill level column; Make Diamond requirement
- 27.2.2.3.4.2. Add new line item “Mechanical malfunctions”; Add “3c” in the 3 skill level column; “b” in the 5 skill level column; Make Diamond requirement
- 27.2.2.4. Insert new task and sub tasks “Field deployable environmental control unit (FDECU)” t.o. references later
- 27.2.2.4.1. Change to “Set-up”; Add “2b” in 3 skill level column; Add “b” to 5 skill level column
- 27.2.2.4.2. Change to “Perform operational tests”; Add “3c” in the 3 skill level column; Add “b” in the 5 skill level column; Make Diamond requirement
- 27.2.2.4.3. Change to “Service/ periodic maintenance”; Add “3c” in the 3 skill level column; Add “b” in the 5 skill level column; Make Diamond requirement
- 27.2.2.4.4. Change to “Troubleshoot”; delete codes from 3 and 5 skill level columns

- 27.2.2.4.4.1 Add line item “Using electrical schematic”; Add “3c” in the 3 skill level column; Add “b” in the 5 Skill level column; Make Diamond requirement
- 27.2.2.4.4.2. Add line item “Mechanical malfunctions”; Add “3c” in the 3 skill level column; “b” in the 5 skill level column; Make Diamond requirement
- 27.2.2.4.5. Add line item “Repairs”; Add “2b” in the 3 skill level column; Add “b” to the 5 skill level column
- 27.2.2.5. Change to “Bare Base M149 Trailer Mounted Water Chiller TR: TMs 10-4130-239-14, 9-2330-267-14P
- 27.2.2.5.1. Change to “Set-up”; “1a” in 3 skill level column; “b” in 5 skill level column
- 27.2.2.5.2. Change to “Operate”; “1a” in 3 skill level column; “b” in 5 skill level column
- 27.2.2.5.3. Add line item “Troubleshooting”; “1a” in 3 skill level column; “b” in 5 skill level column
- 27.2.2.5.4. Add line item “Repairs”; “1a” in 3 skill level column; “b” in 5 skill level column
- 27.2.2.6. Add line item “TEMPER tent erection TR: TO 35E5-6-1; AFPAM 10-219, Vol 5; AFH 10-222, Vol 1
- 27.2.2.6.1. Add line item “Assembly”; “a” in the 3 skill level column; “b” in the 5 skill level column
- 27.2.2.6.2. Add line item “Disassembly”; “a” in the 3 skill level column; “b” in the 5 skill level column
- 27.3.1.1. Change to “Set-up”; “2b” in the 3 skill level column; “b” in the 5 skill level column
- 27.3.1.2. Change to “Perform operational test”; change “3c” to “2b” in the 3 skill level column; “b” in the 5 skill level column; Delete Diamond requirement
- 27.3.1.3. Change to “Service/periodic maintenance”; change “3c” to “2b” in the 3 skill level column; “b” in the 5 skill level column; Delete Diamond requirement
- 27.3.1.4. Change to “Troubleshoot”; “2b” in the 3 skill level column; “b” in the 5 skill level column; Delete Diamond requirement
- 27.3.1.5. Add line item “Repairs”; “2b” in the 3 skill level column; “b” in the 5 skill level column; Delete Diamond requirement
- 27.3.2.2. Change “3c” in the 3 skill level column to “2b”; Delete Diamond requirement
- 27.3.2.5.1. Add line item “Using electrical schematic”; add “3c” in the 3 skill level column; add “b” in the 5 skill level column; Make Diamond requirement
- 27.3.2.5.2. Add line item “Mechanical malfunctions”; add “3c” in the 3 skill level column; add “b” in the 5 skill level column; Make Diamond requirement
- 27.3.6. Change task to read “Tactical Environment Control Units”
- 27.3.7. Add item “Chemically Hardened Air Management Plant (CHAMP)”
- 27.3.8. Add item “HMMWV”
- 27.3.9. Add item “Small Shelter Systems (SSS)”
- 27.3.9.1. Add item “HAC-36-4VA”
- 27.3.10. Change “30 kW” to “30/60 kW” in the task title

CORE Tasks (after workshop)

5—Level (15 ea)

- 12.4.1. Fabricate piping and tubing systems
- 12.4.2. Install piping and tubing systems
- 13.2.2. Braze and solder
- 16.9.5. Electrically connect (single phase and three phase)
- 16.9.6. Reverse rotation of electric motors
- 16.9.7. Measure motor current draw
- 19.8. Adjust fuel/air ratio for proper combustion efficiency
- 21.3.1. Locate refrigerant leaks
- 21.3.3. Recover, recycle, and reclaim refrigerants from refrigeration and air conditioning systems
- 21.3.4. Pump down refrigeration systems
- 21.3.5. Pressure check refrigeration systems
- 21.3.6. Charge HVAC/R systems with refrigerant
- 21.5.3.7. Plot pressure enthalpy chart for refrigeration cycle
- 21.5.3.8. Measure air conditioning and refrigeration system for efficiency using pressure-temperature charts
- 27.2.1.3.3. Perform operational tests

7—Level (2 ea)

- 21.5.3.9. Calculate and adjust superheat
- 21.5.3.10. Calculate subcooling

Diamond Task (16 ea)

- 27.2.2.2.2. Conduct Pre-operational test
- 27.2.2.2.3. Service/periodic maintenance
- 27.2.2.2.4.1. Using electrical schematic
- 27.2.2.2.4.2. Mechanical malfunctions
- 27.2.2.3.2. Perform operational tests
- 27.2.2.3.3. Service/periodic maintenance
- 27.2.2.3.4.1. Using electrical schematic
- 27.2.2.3.4.2. Mechanical malfunctions
- 27.2.2.4.2. Perform operational tests

- 27.2.2.4.3. Service/periodic maintenance
- 27.2.2.4.4.1. Using electrical schematic
- 27.2.2.4.4.2. Mechanical malfunctions
- 27.3.2.3. Perform operational tests
- 27.3.2.4. Service/periodic maintenance
- 27.3.2.5.1. Using electrical schematic
- 27.3.2.5.2. Mechanical malfunctions

ETCA

Change to supplemental courses are as follows:

J3AZR3E151 006 Refrigeration and Air-conditioning Systems I

-Change to prerequisites: delete “1 year of field experience as” a 5-skill level.

Prerequisites now read:

“AFCSs 3E151/71 or civilian equivalent. Must have knowledge of and experience in electronics, electricity, and air-conditioning controls. Personnel must have a 5-skill in refrigeration and air-conditioning. ECL 70.”

J3AZR3E151 007 Mechanical Systems Electrical/Controls Troubleshooting

-Change to prerequisites: insert “Personnel must have 1 year of field experience as a 5-skill in refrigeration and air-conditioning.”

Prerequisites now read:

“AFCSs 3E151/71 or civilian equivalent. Personnel must have knowledge of and experience in basic electrical circuitry or be a graduate of 3ABR3E131 or an equivalent course. Personnel must have 1 year of field experience as a 5-skill in refrigeration and air-conditioning. Personnel who have attended course J3AZR54573 000 should not attend this course. ECL 70.”

J3AZR3E151 008 Refrigeration and Air-Conditioning Systems II

-Change to prerequisites: delete “1 year of field experience as” a 5-skill level.

Prerequisites now read:

“AFCSs 3E151/71 or civilian equivalent. Must have knowledge of and experience in electronics, electricity, and air-conditioning controls. Personnel must have a 5-skill in refrigeration and air-conditioning. ECL 70.”

-Delete Lithium bromide portion from J3AZR3E151 008 curriculum.

Courses have been updated:

Old course number	New course number
J3AZR3E151 006.....	J3AZR3E151 014
J3AZR3E151 007.....	J3AZR3E151 013
J3AZR3E151 008.....	J3AZR3E151 015

ACTION ITEMS

ITEM	OPR/OCR	ECD	COMP
1.ContactAFPC/DP PAC and request the recommended changes to AFMAN 36-2108 STATUS:	OPR: HQ AFCESA/CEOT SMSgt Shakal	1 Feb 00	Submitted 22 Feb 00
2. Make necessary changes to CFETP Part 1 and STS as specified by workshop members STATUS:	OPR: 366th TRS/TRRT Mr. Tom Kee OCR: HQ AFCESA/CEOT SMSgt Shakal	1 Feb 00	Working
3. Submit all course changes to new supplemental courses for posting on ETCA web site STATUS:	OPR: 366th/TRS/TRRT Mr Tom Kee	1 Feb 00	Working
4. Insert a bullit on facility acceptance inspection responsibilities for CFETP Part 1. STATUS:	OPR: HQ AFCESA/CEOT SMSgt Shakal	1 Feb 00	Complete
5. Check WTS for generator requirements for inclusion in STS specific contingencies section. STATUS:	OPR: HQ AFCESA/CEOT MSgt Dan Red Cloud	1 Jan 00	Complete
6. Check into policy; if core task certification at the school satisfies AFQTP requirement	OPR: HQ AFCESA/CEOT SMSgt Shakal	1 Jan 00	Complete

**'99 3E1X1 U&TW RESULTS
HVAC/R**

	Pre- Dec 99 U&TW	Post- Dec 99 U&TW
Total 5-level core tasks.....	34.....	15
Total 7-level core tasks.....	0.....	2
Total core tasks.....	34.....	17
5-level core tasks.....	11.....	11
certified at school		
7-level core tasks.....	0.....	0
certified at school		
Total number of tasks		
certified at school.....	27.....	34
Total core tasks to be		
Certified at the CE Unit.....	24.....	6
Total ♦ Tasks.....	9.....	16
♦ Certified at school.....	7.....	16

OVERALL RESULTS: Prior to the December '99, 24 core tasks required certification at the duty location. After the '99 U&TW, 6 core tasks require certification at the duty location. The overall training load at the duty section lessened by 18 core tasks.

LIST OF VOTING MEMBERS

<u>NAME</u>	<u>COMMAND</u>	<u>SIGNATURE</u>
SrA Derek A. Sonnier	11 th WG	_____
TSgt Keith B. Smith	ACC	_____
TSgt David D. Dietz	AETC	_____
SMSgt Luther Mitchell	AFRC	_____
SMSgt Darryl Foster	AFSPC	_____
MSgt Scott E Cornell	AFSOC	_____
MSgt Phil Casey	AMC	_____
TSgt Brian F. Woodford	ANG	_____
SMSgt John Hunker	PACAF	_____
SMSgt Duane Roberson	USAFE	_____
MSgt Ralph E. Johnson	AIA	_____
TSgt Paul M. Beach	AFMC	_____
SMSgt Mike Shakal	HQ AFCESA	_____

* NOTE, USAFA was invited to attend this workshop but was not represented.